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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,565	10/20/2003	Paul Underbrink	ST02010USU (246-US-U1)	8409
26285	7590	10/14/2009	EXAMINER	
K&L GATES LLP 535 SMITHFIELD STREET PITTSBURGH, PA 15222			FOTAKIS, ARISTOCRATIS	
			ART UNIT	PAPER NUMBER
			2611	
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			10/14/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/689,565	<b>Applicant(s)</b> UNDERBRINK ET AL.	
	<b>Examiner</b> ARISTOCRATIS FOTAKIS	<b>Art Unit</b> 2611	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08/17/2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 4, 6 - 12, 14 - 20 and 22 - 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 4, 6 - 12, 14 - 20 and 22 - 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 6, 9, 14, 17 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norman et al. (US 6,282,231) in view of Fenton et al (6,184,822).

Re claim 1, Norman discloses a radio receiver apparatus in receipt of a spread spectrum radio signal having a first signal tracking channel and a second signal tracking channel (column 7, lines 20-32), comprising:

a demodulator (see column 4, lines 51- column 5, lines 1-2) that demodulates a first signal in the spread spectrum radio signal into the first signal tracking channel and a second signal in the spread spectrum radio signal into the second signal tracking channel;

a crosscorrelator (block 40 in figure 1) connected to the first tracking channel and the second tracking channel;

a signal processor (blocks 40 and 50 in figure 1) that identify a carrier wave jamming signal with the crosscorrelator that is in a mode to identify CW jamming signals (Col 7, Lines 14 – 27, 51 – 57 and Col 8, Lines 29 – 55) by correlation with a fixed

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predetermined code for a pseudo random (PRN) code (*The code used is a PRN code which is a fixed predetermined code known by the receiver*);

a tracker (block 50 in figure 1) that tracks the carrier wave jamming signal; and

a signal canceller (block 60 in figure 1) subtracts the carrier wave jamming signal from the spread spectrum signal.

However, Norman does not teach of the crosscorrelator has a code of all ones for the PRN code.

Fenton teaches of a GPS receiver wherein the correlator (#22) is disabled by providing to the correlator a signal of all 1s, such that the I-Q values pass through the correlator unchanged.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a code of all ones for the PRN code such that the spreaded carrier wave jamming signal pass through the correlator unchanged and identifying the despreaded desired signal.

Re claim 9, Norman discloses a method of removing a carrier wave jamming signal from a spread spectrum signal having a first signal tracking channel and a second signal tracking channel (column 7, lines 20-33), comprising:

demodulating a first signal in the spread spectrum radio signal into the first signal tracking channel and a second signal in the spread spectrum radio signal into the second signal tracking channel (see column 4, lines 51- column 5, lines 1-2);

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correlating the first tracking channel and the second tracking channel with a crosscorrelator (block 40 in figure 1);

changing the crosscorrelator from a cross-correlation identification mode to a carrier wave jamming identification mode (Col 7, Lines 14 – 27, 51 – 57 and Col 8, Lines 29 – 55) where the crosscorrelator correlates in the carrier wave jamming signal identification mode with a fixed predetermined code for a pseudo random number (PRN) code (*The code used is a PRN code which is a fixed predetermined code known by the receiver*);

computating a product of the first signal tracking channel and the second signal tracking channel to obtain a carrier wave jamming signal (blocks 40 and 50 in figure 1);

tracking the carrier wave jamming signal (block 50 in figure i); and

canceling the carrier wave jamming signal from the spread spectrum signal (block 60 in figure 1).

However, Norman does not teach of the crosscorrelator has a code of all ones for the PRN code.

Fenton teaches of a GPS receiver wherein the correlator (#22) is disabled by providing to the correlator a signal of all 1s, such that the I-Q values pass through the correlator unchanged.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a code of all ones for the PRN code such that the spreaded carrier wave jamming signal pass through the correlator unchanged and identifying the despreaded desired signal.

Re claim 17, Norman discloses a receiver in receipt of a spread spectrum radio signal having a first signal tracking channel and a second signal tracking channel (column 7, lines 20-33), comprising:

demodulation means (see column 4, lines 51- column 5, lines 1-2) for demodulating a first signal in the spread spectrum radio signal into the first signal tracking channel and a second signal in the spread spectrum radio signal into the second signal tracking channel;

correlation means for correlating the first tracking channel and the second tracking channel (block 40 in figure 1);

computation means for computing a product of the first signal tracking channel and the second signal tracking channel to obtain a carrier wave jamming signal (blocks 40 and 50 in figure 1), when the the correlation means is in a carrier wave jamming identification mode (Col 7, Lines 14 – 27, 51 – 57 and Col 8, Lines 29 – 55) by correlating with a fixed predetermined code for a pseudo random (PRN) code (*The code used is a PRN code which is a fixed predetermined code known by the receiver*);

means for tracking the carrier wave jamming signal (block 50 in figure 1); and

canceling means that cancels the carrier wave jamming signal from the spread spectrum signal (block 60 in figure 1).

However, Norman does not teach of the crosscorrelator has a code of all ones for the PRN code.

Fenton teaches of a GPS receiver wherein the correlator (#22) is disabled by providing to the correlator a signal of all 1s, such that the I-Q values pass through the correlator unchanged.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a code of all ones for the PRN code such that the spreaded carrier wave jamming signal pass through the correlator unchanged and identifying the despreaded desired signal.

Re claims 6, 14, 22:

Norman further teaches the spread spectrum radio signal is a position signal (column 7, lines 10-13).

Claims 2 - 4, 10 - 12 and 18 - 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norman and Fenton in view of Heinzl et al. (US 2002/0012411).

Re claims 2, 10, 18, Norman and Fenton disclose all of the subject matters in claim 1 above except for a signal generator that generates a replica carrier wave jamming signal having a phase from the carrier wave jamming signal having another phase and subtracts the replica carrier wave jamming signal from the spread spectrum signal to cancel the carrier wave jamming signal.

However, Heinzl et al. teach a signal generator that generates a replica carrier wave jamming signal and subtracts the replica carrier wave jamming signal from the



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spread spectrum signal to cancel the carrier wave jamming signal (page 1, paragraph [0011]).

It is desirable to include a signal generator that generates a replica carrier wave jamming signal and subtracts the replica carrier wave jamming signal from the spread spectrum signal to cancel the carrier wave jamming signal to enable GPS and other RF navigation receivers to be structured flexibly to improve anti-jamming capability. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a signal generator that generates a replica carrier wave jamming signal and subtracts the replica carrier wave jamming signal from the spread spectrum signal to cancel the carrier wave jamming signal to provide improved resistance to jamming signals.

Re claims 3, 11, 19:

Heinzl et al. further teach a signal rotator that rotates the phase of the replica carrier wave jamming signal (page 3, paragraphs [0041] and [0042]).

Re claims 4, 12, 20:

Heinzl et al. further teach the signal rotator .adjusts the phase of the replica carrier wave jamming signal to match the other phase of the carrier wave jamming signal in the spread spectrum signal (page 3, paragraphs [0041] and [0042]).

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Claims 7, 8, 15, 16, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norman and Fenton in view of Van Stralen et al. (US 6,621,855).

Re claims 7, 15, 23, Norman and Fenton disclose all of the subject matter in claim 1 above except for crosscorrelator is at least a 1024 bit wide correlator.

However, Van Stralen et al. disclose crosscorrelator is at least a 1024 bit wide correlator (column 3, lines 45-50).

It is desirable to have a crosscorrelator is at least a 1024 bit wide correlator to improve the reliability of the detection of timing and frequency estimates especially when the signals are weak (column 11, lines 47-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a crosscorrelator is at least a 1024 bit wide correlator as taught by Van Stralen et al. in the system as taught by Norman et al. to improve the reliability of the detection of timing and frequency estimates (column 11, lines 47-50).

Re claims 8, 16, 24:

Van Stralen et al. further teach the crosscorrelator includes an at least a 1024 bit wide match filter (column 3, lines 45-65).

It is desirable to have the crosscorrelator further includes an at least a 1024 bit wide match filter to improve the reliability of the detection of timing add frequency estimates especially when the signals are weak (column 11, lines 47-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was

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made to have the crosscorrelator includes an at least a 1024 bit wide match filter as taught by Van Stralen et al. in the system as taught by Norman et al. to improve the reliability of the detection of timing and frequency estimates (column 11, lines 47-50).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aristocratis Fotakis whose telephone number is (571) 270-1206. The examiner can normally be reached on Monday - Thursday 7 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Aristocratis Fotakis/

Examiner, Art Unit 2611

/CHIEH M FAN/

Supervisory Patent Examiner, Art Unit 2611